

Attachment H Water Quality by Hydrologic Unit Codes

The water quality status of Reclamation reservoirs and the downstream reaches that may be affected by current operations is shown in the following table G-1. This information was compiled from Section 303 (d) of the CWA and identifies stream reaches by hydrologic unit codes (HUC) originally developed by the USGS; these are further subdivided by prominent landmarks or towns. The furthest upstream reaches tend to have little or no water quality problems and support all uses. Water quality problems tend to increase downstream and include not only introduced substances but also temperature and flow changes that limit some uses. These problems are identified for each reach. Sediments, high temperature, bacteria, and low dissolved oxygen have the greatest impact on beneficial uses within the area of impact. Reservoirs and stream reaches listed as supporting all uses do not have significant water quality problems.

Table H-1 Water Quality Status of Reclamation Reservoirs and Affected Downstream Reaches		
Stream	Stream Reach	Pollutants ¹
HUC 17040101		
South Fork Snake River	South Fork Snake River and Jackson Lake	All uses supported
South Fork Snake River	Jackson Lake to Gros Ventre River	All uses supported
HUC 17040103		
South Fork Snake River	From Gros Ventre to Grays River	All uses supported
HUC 17040104		
South Fork Snake River	Palisades Reservoir to Irwin ²	Flow alteration
South Fork Snake River	Irwin to Heise ²	Flow alteration
HUC 17040201		
Snake River	South Fork Snake River from Heise and main stem Snake River to Bonneville County line downstream of Idaho Falls	All uses supported
HUC 17040202		
Henrys Fork	Island Park Reservoir ⁴	All uses supported
Henrys Fork	Island Park Reservoir to Ashton	All uses supported
HUC 17040203		
Henrys Fork	Ashton to South Fork Snake River	All uses supported
HUC 17040206		
Snake River	Bonneville County line to Ferry Butte ³	Nutrients, sediment, DO, flow alteration
Snake River	Ferry Butte to American Falls Reservoir ⁵	Sediment
Snake River	American Falls Reservoir ⁶	Nutrients, sediment, DO
Bannock Creek	Headwaters to mouth	Sediment, nutrients, pathogens
HUC 17040208		
Portneuf River	Chesterfield Reservoir to American Falls Reservoir	Bacteria, nutrients, sediment

Table H-1 Water Quality Status of Reclamation Reservoirs and Affected Downstream Reaches		
Stream	Stream Reach	Pollutants ¹
HUC 17040209		
Snake River	American Falls Dam to Eagle Rock ⁵	Sediment
Snake River	Eagle Rock to Massacre Rock ⁵	Sediment
Snake River	Massacre Rock to Lake Walcott ⁷	Sediment, DO, pesticides
Snake River	Milner Lake ⁷	Nutrient, sediment, DO, flow alteration
HUC 17040212		
Snake River	Milner Dam to Murtaugh ⁸	Nutrient, sediment, DO, thermal modification, flow alteration, pathogens
Snake River	Murtaugh to Twin Falls Reservoir ⁸	Nutrient, sediment, DO, pathogens, NH ₃
Snake River	Shoshone Falls to Rock Creek ⁸	Sediment, nutrient, temperature
Snake River	Rock Creek to Cedar Draw ⁸	Sediment, nutrient, temperature
Snake River	Cedar Draw to Clear Lake Bridge ⁸	Sediment, nutrient, temperature
Snake River	Clear Lake Bridge to Mud Creek ⁸	Sediment, nutrient, temperature
Billingsley Creek	Headwaters to Snake River ⁸	Nutrients, sediment, DO, flow alteration, NH ₃
Snake River	King Hill Diversion to Bliss bridge ⁸	Sediment
Snake River	Bliss Reservoir ⁸	Nutrients, sediment, DO, flow alteration, pathogens, NH ₃
Snake River	Cassia Gulch to Big Pilgrim Gulch ⁸	Sediment, nutrient, temperature
Snake River	Big Pilgrim Gulch to King Hill ⁸	Nutrient, DO, flow alteration
HUC 17040221		
Little Wood River	Little Wood River Reservoir	Nutrient, sediment, DO, flow alteration, pathogens
Little Wood River	East Canal Diversion to Silver Creek	Nutrient, sediment, DO, flow alteration, pathogens
Little Wood River	Silver Creek to Richfield	Nutrient, sediment
Little Wood River	Richfield to Big Wood River	Nutrient, sediment, DO, flow alteration, pathogens
HUC 17050101		
Snake River	King Hill to Highway 50 bridge	Sediment
HUC 17050103		
Snake River	C. J. Strike River to Castle Creek	Sediment
Snake River	Castle Creek to Swan Falls	Sediment
Snake River	Swan Falls to Boise River	Nutrient, sediment, DO, flow alteration, bacteria, pH
HUC 17050110		
Owyhee River	Lake Owyhee	Mercury

Table H-1 Water Quality Status of Reclamation Reservoirs and Affected Downstream Reaches		
Stream	Stream Reach	Pollutants ¹
HUC 17050112		
Boise River	Arrowrock Reservoir	All uses supported
Boise River	Lucky Peak Reservoir	All uses supported
HUC 17050113		
South Fork Boise River	Anderson Ranch Reservoir	All uses supported
South Fork Boise River	Anderson Ranch Dam to Arrowrock Reservoir	All uses supported
HUC 17050114		
Boise River	Lucky Peak Dam to Star ⁹	Flow alteration
Boise River	Star to Notus ⁹	Nutrient, sediment, DO, temperature, bacteria
Boise River	Notus to Snake River ⁹	Nutrient, sediment, DO pathogens, temperature
HUC 17050115		
SNAKE RIVER	Boise River to Weiser River	Nutrient, sediment, bacteria
HUC 17050116		
North Fork Malheur River	Beulah Reservoir to Malheur River	Fecal coliform bacteria
HUC 17050117		
Malheur River	Namorf to Snake River	Chlorophyll α , pesticides, fecal coliform bacteria
HUC 17050118		
Bully Creek	Bully Creek Reservoir to Malheur River	Chlorophyll α , fecal coliform bacteria
HUC 17050119		
Willow Creek	Pole Creek to Malheur River	Chlorophyll α , fecal coliform bacteria
HUC 17050120		
Deadwood River	Deadwood Reservoir	All uses supported
Deadwood River	Deadwood Dam to South Fork Payette River	All uses supported
South Fork Payette River	Deadwood River to mouth	All uses supported
HUC 17050122		
Payette River	Black Canyon Dam to Snake River ¹²	Nutrient, bacteria, temperature
HUC 17050123		
North Fork Payette River	Cascade Reservoir ¹⁰	Nutrient, pathogens, DO, pH
North Fork Payette River	Cascade Dam to mouth	All uses supported
HUC 17050201		
SNAKE RIVER	Weiser (town) to Brownlee Dam	Sediments, DO, pH
SNAKE RIVER	Brownlee Reservoir	Mercury

Table H-1 Water Quality Status of Reclamation Reservoirs and Affected Downstream Reaches		
Stream	Stream Reach	Pollutants ¹
Snake River	Brownlee Reservoir to Idaho Border	Summer temperature
Snake River	Oxbow Dam to Hells Canyon Dam	Summer temperature
HUC 17050202		
Burnt River	Clarks Creek to Snake River	Flow alteration, summer temperature
HUC 17050203		
Powder River	National forest boundary to Sutton Creek	Fecal coliform bacteria
Powder River	Sutton Creek to Thief Valley Reservoir	Fecal coliform bacteria
Powder River	Thief Valley Reservoir to Snake River ¹⁵	DO, flow alteration, temperature, fecal coliform bacteria
HUC 17060201		
Salmon River	Headwaters to East Fork Salmon River ¹⁸	Sediment
Yankee Fork Salmon River	Headwaters to Salmon River ¹⁸	Sediment, habitat alterations
HUC 17060203		
Salmon River	Pahsimeroi River to North Fork Salmon River ¹⁸	All uses supported
HUC 17060208		
South Fork Salmon River	Headwaters to Rice Creek ¹⁸	Sediments
South Fork Salmon River	Rice Creek to Buckhorn Creek ¹⁸	Sediment, nutrients, pathogens, ammonia
South Fork Salmon River	Buckhorn Creek to Salmon River ¹⁸	Sediment
South Fork of East Fork Salmon River	Headwaters to Salmon River ¹⁸	Sediment
HUC 17050120		
Deadwood River	Headwaters to Deadwood Reservoir ¹¹	Sediment
HUC 17050124		
Weiser River	Galloway to Snake River (includes Mann Creek Reservoir) ¹³	Nutrients, bacteria, DO, sediment, temperature
HUC 17050110		
Owyhee River	Black Willow Creek to Owyhee Dam ¹⁴	DO
Owyhee River	Mouth to Black Willow Creek ¹⁴	Chlorophyll α , fecal coliform, toxins (DDT and Dieldrin)
HUC17060101		
Snake River	Hells Canyon Dam to Washington border	Summer temperature
HUC 1760103		
Snake River	Clearwater River to Oregon border	Temperature, pH
HUC 17060104		
Grande Ronde River	Wallowa River to headwaters ¹⁶	Habitat modification, sedimentation

Table H-1 Water Quality Status of Reclamation Reservoirs and Affected Downstream Reaches		
Stream	Stream Reach	Pollutants ¹
HUC 17060105		
Wallowa River	Wallowa River to Tanner Gulch	Summer pH, temperature
Wallowa River	Wallowa River to Five Points Creek	DO, flow modification, periphyton, fecal coliform
Wallowa River	Mouth to Wallowa Lake ¹⁷	Flow and habitat modification, summer pH, summer temperature, fecal coliform (fall through spring), sediment
HUC 17060107		
Snake River	Clearwater River to Palouse River	Total dissolved gas, DDT, 4,4'-DDE, Dieldrin
HUC 17060110		
Snake River	Palouse River to mouth (Columbia River)	Total dissolved gas, 4,4'-DDE, PCBs, DO, pH, temperature, Dieldrin

- ¹ DO = dissolved oxygen, NH₃ = Ammonia, pH = measure of acidity, also includes adverse flow regimes
- ² This listing is directly controlled by the releases from Palisades Reservoir. There are no major diversions within this reach that affect this flow. Winter flows are needed below the reservoir to provide for adequate winter fish habitat.
- ³ Nutrients in this reach are contributed by treated and untreated domestic sewage, animal wastes, irrigation return flows, and industrial discharges. Primary sediment sources are from irrigated agriculture and construction. The dissolved oxygen deficiencies are associated with domestic and industrial waste effluents and/or the decay of algae from abundant growth due to excess nutrients.
- ⁴ This reach does not have any listed pollutants; however, about 1,000-acre-foot minimum storage in Island Park Reservoir prevents excessive sediment discharge into Henrys Fork.
- ⁵ This reach has a significant amount of irrigation return flows. Construction, grazing, and reservoir discharge also contribute sediments.
- ⁶ The Portneuf River and Bannock Creek drain directly into the reservoir and, along with the inflow of the Snake River, contribute to the pollutants in the reservoir. When the reservoir storage is below about 50,000 acre-feet, sediment in the discharge exceeds the state turbidity standard.
- ⁷ Many agricultural irrigation returns drain into the Snake River in this reach and may contribute most of the pollutants.
- ⁸ Milner Dam discharge causes heavy impact to the middle Snake River. Reservoirs within the middle Snake River are for power generation and Reclamation has little influence on their operation. Under the FERC license for Milner powerplant, a minimum flow of 200 cfs must be released, if available. But on occasion, the flow is reduced to zero. Flows below Milner Dam are primarily replenished by agricultural drains, tributaries, ground-water flow, and geothermal sites. Over 80 agricultural and natural drains have been noted in this reach on the north and south sides of the Snake River rim. During dry years, over 60 percent of the flow in the middle Snake River is from groundwater; the largest inflow being from the Snake River aquifer. During low flow periods, sediments are not flushed from the river. Gradually aquatic macrophytes begin to grow on the sediments producing nuisance algal growth. Low flows reduce the river's capacity to assimilate nutrient loads.
- ⁹ A minimum discharge of 80 cfs is recommended. The area along the stretch of the Boise River from Lucky Peak to the Snake River is heavily populated and has many agricultural return flows, confined livestock feeding lots, and urban drainage that would contribute to pollutants.
- ¹⁰ These listings are due to the inflow pollutant load, nutrient recycling in the shallow reservoir, and biological activity within the reservoir. The reservoir can be operated to reduce nutrient levels, algal production and improve fish habitat. Dissolved oxygen can be critical during winter periods of ice cover which prevents the natural oxygen exchange with the stored water. A target minimum pool of 300,000 acre-feet is recommended to reduce chances of fish kill within the reservoir during periods of dissolved oxygen depletion. Reclamation

and the State of Idaho have conducted water quality model studies on Cascade Reservoir to determine possible operational changes that can improve existing water quality and reduce the risk of winter fish kills. The model indicated that a minimum pool of 250,000 acre-feet during a dry year would result in a minimal volume of water suitable for trout survival. If subsequent dry years occurred, the reservoir may not be filled to the minimum pool. The volume of water suitable for trout survival with a 400,000-acre-foot minimum pool is much greater, although maintenance of a high-minimum pool would reduce the amount of water discharged from the reservoir for downstream activities. Water quality problems within the reservoir can impact downstream aquatic habitat.

¹¹ Silviculture and roads in this area contribute sediments to the Deadwood River.

¹² This is due primarily to return flows below the dam. Over the past several years, some flow augmentation releases have been routed downstream during the summer months to reduce water quality problems associated with irrigation returns to the lower Payette River.

¹³ These pollutants are typical of irrigation return flows and animal waste runoff.

¹⁴ Low dissolved oxygen levels can be attributed to releases from the bottom of the reservoir. The primary outlet is at elevation 2370 feet which is 300 feet below the normal water level.

¹⁵ Discharges, when the reservoir is below minimum pool, contribute excessive sediments downstream.

¹⁶ The Grande Ronde River is the only eastern Oregon tributary with anadromous fish.

¹⁷ The Wallowa River pollutants will impact the Grande Ronde River.

¹⁸ Forest activities, livestock management, and roads increase sediment loads.

¹⁹ The Salmon River and Grande Ronde River are affected by irrigation return flows.

